robbe

ARROW

Large
outdoor co-axial helicopter
for beginners

Operating Instructions
BLUE ARROW XL 490 RTF 2.4 GHz

No. S2542

V01/01/14

Explanation of specialist terms:

Motor speed ("Throttle"): This controls the model's climb and descent.

Yaw: The model's movement around the vertical axis; the helicopter rotates to right or left.

Elevator: The model's movement around the lateral axis, Forward or reverse flight.

Roll: The model's movement around the longitudinal axis: sideways movement to right or left.

Mode 1: Function assignment of the control movements relative to the stick movements.
In this case motor speed (throttle) and roll are controlled by the right-hand stick; pitch-axis and tail rotor by the left-hand stick.

Mode 2: Function assignment of the control movements relative to the stick movements.
In this case motor speed (throttle) and tail rotor are controlled by the left-hand stick; pitch-axis and roll by the right-hand stick.

Binding: Creating the radio link between transmitter and receiver.

Contents Page

Be sure to read these Safety Notes before you operate your model. Always keep to the procedures and settings recommended in the instructions.

If you are operating a radio-controlled model aircraft, helicopter, car or boat for the first time, we recommend that you enlist an experienced modeller to help you.

Safety Notes

Radio-controlled models are not toys in the usual sense of the term. Young persons under fourteen years should only be allowed to operate them under the supervision of an adult.

Building and operating these models requires technical expertise, manual skills, a careful attitude and safety-conscious behaviour.

Errors, negligence and omissions in building or flying these models can result in serious personal injury and damage to property.

Since the manufacturer and vendor are not in a position to check that your models are built and operated correctly, all we can do is bring these hazards expressly to your attention. We deny all further liability.

Helicopter rotors, and all moving parts generally, constitute a constant injury hazard. It is essential to avoid touching such parts.

Please bear in mind that motors and speed controllers may become hot when operating. It is important to avoid touching these parts.

Do not stand close to the hazard area around rotating parts when an electric motor is connected to the flight battery.

You must also take care to keep all other objects away from moving or rotating parts.

Observe the instructions provided by the battery manufacturer.

Overcharged or incorrectly charged batteries may explode. Take care to maintain correct polarity.

Ensure the equipment is protected from dust, dirt and moisture contamination. Do not subject the system to excessive heat, cold or vibration.

Use the recommended charger only, and charge the batteries only for the prescribed period.

Check your equipment for damage at regular intervals, and replace defective components with genuine spare parts.

Do not re-use any devices which have been damaged in a crash or by water, even when they have dried out again.

Send the equipment to the robbe Service Department for checking, or replace the parts in question.

Crash or water damage can result in concealed defects which may lead to failure in subsequent use.

Use only those components and accessories which we specifically recommend.

Do not carry out modifications to the radio control system components apart from those described in the instructions.

Operating the model

Caution - injury hazard:
Please keep your model helicopter - including small co-axial and single-rotor models - a safe distance away from yourself and others. Never fly over spectators, other pilots or yourself. Always fly manoeuvres facing away from other pilots and spectators. Please note that model helicopters generally, and aerobatic types in particular, are subject to enormous flight loads, and that interference cannot be ruled out even when you are using the best possible radio control system components. Operating these models requires a highly responsible attitude and all possible safety precautions for pilot and spectators.

- Never fly over spectators or other pilots, and maintain a safe distance from them at all times.
- Never endanger people or animals.
- Never fly close to high-tension overhead cables or residential areas.
- Do not operate your model in the vicinity of canal locks or open waterways.
- Do not operate your model from public roads, motorways, paths and squares etc.; use authorised model flying sites only.
- **Never operate the model in stormy weather.**

Never “point” the transmitter aerial straight at the model when operating it. The transmitter signal is at its weakest in this direction. It is always best to stand with the long side of the aerial angled towards the model.

Insurance
Ground-based models are usually covered by standard personal third-party insurance policies. In order to fly model aircraft you will need to extend the cover of your existing policy, or take out specific insurance.
Check your insurance policy and take out new cover where necessary.

Liability exclusion:
robbe Modellsport is unable to ensure that you observe the assembly and operating instructions, or the conditions and methods used for installing, operating and maintaining the model components.
For this reason we accept no liability for loss, damage or costs which are due to the erroneous use and operation of our products, or are connected with such operation in any way.

Regardless of the legal argument employed, our obligation to pay compensation is limited to the invoice value of those robbe products directly involved in the event in which the damage occurred, unless otherwise prescribed by law. This does not apply if the company is deemed to have unlimited liability according to statutory regulation due to deliberate or gross negligence.

Set contents

- Large co-axial helicopter, completely assembled and set up, ready to fly
- Aluminium tail boom with CFRP brace
- LED tail lighting
- GRP side frames
- Multi-colour plastic canopy in the Blue Arrow scheme
- Two 380-size brushed motors
- LiPo battery, 11.1 V / 1600 mAh
- 230 V mains PSU
- Factory-fitted airborne electronics including servos, speed controller, receiver, gyro
- 2.4 GHz four-channel transmitter with simple stick mode change (mode 2 or 1)
- Comprehensive operating and flying instructions

Dear customer,

Congratulations on choosing a factory-assembled model helicopter from our range. Many thanks for placing your trust in us.

The model can be completed and made ready to fly very quickly. Please read right through these instructions before attempting to fly the model for the first time , as this will make it much easier to operate the model safely.

All directions, such as “right-hand”, are as seen from the tail of the model, looking forward.

Specification

Main rotor diameter:	approx. 490 mm
Tail rotor diameter:	approx. 110 mm
Length:	approx. 680 mm
Height:	approx. 305 mm
All-up weight:	approx. 600 g

RC functions

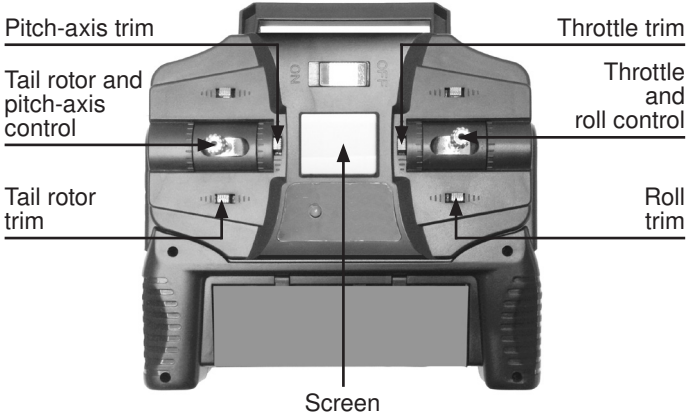
Yaw, pitch-axis, roll, climb / descent

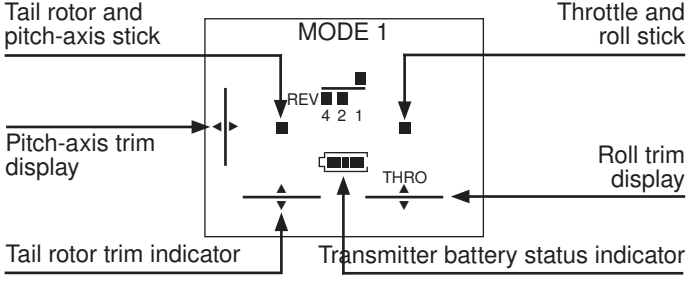
Essential accessories

AA-size alkali-manganese dry cell	4 x 8008

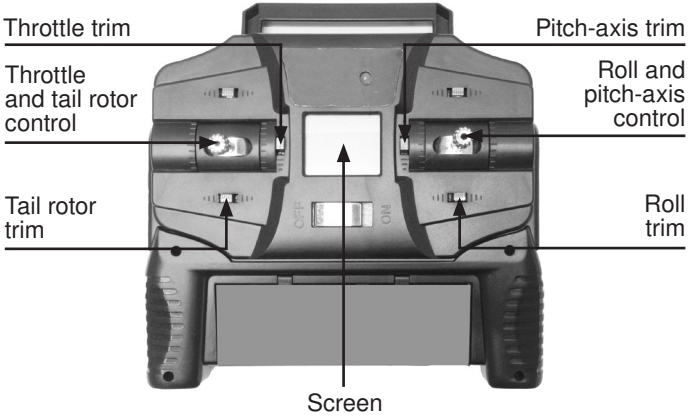
Please be sure to observe the safety notes regarding the safe handling of Lithium-Ion-Polymer batteries on page 8.

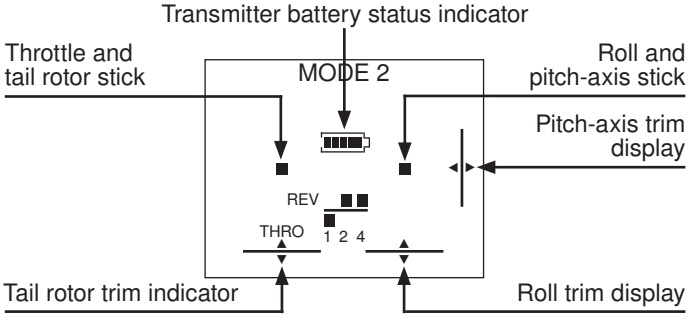
Transmitter settings, Mode 1:





Transmitter settings, Mode 2 (as supplied):

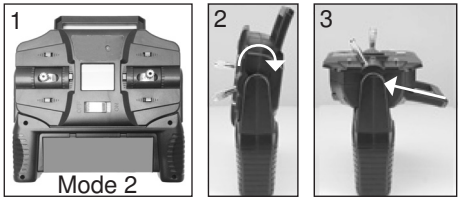




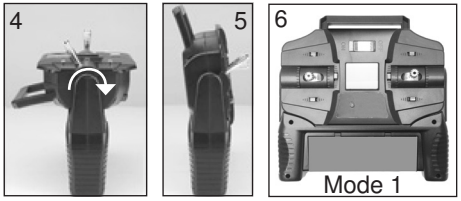
Note: you will hear an intermittent audible warning when the transmitter batteries are almost flat.

Converting the transmitter from "Mode 2" (throttle left) to "Mode 1" (throttle right)

The transmitter is supplied set to Mode 2 as standard. If you prefer Mode 1 and wish to convert the transmitter to that mode, use this procedure:

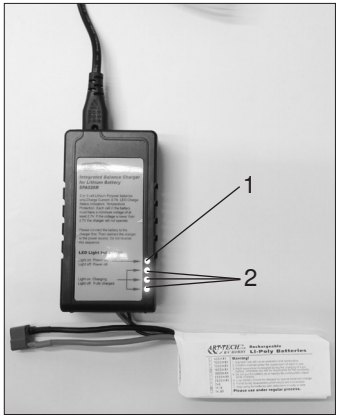


The transmitter (Fig.1) must be switched off. Rotate the control unit backwards through 90° (Fig.2). Push the handle fully to the left (Figs. 3 and 4).



Turn the control unit through a further 90° (Fig. 4) until it snaps into place (Fig. 5). The transmitter is now set to Mode 1 (Fig. 6).

Charging the flight battery



Connect the battery charger to the wall socket.
The three red monitor LEDs on the charger light up briefly, and the green operating indicator (1) glows constantly.
Connect the flight battery to the charger's 11.1 V output. During the charge process the three red monitor LEDs (2) glow constantly. The charge process is complete when the red LEDs go out.
Disconnect the flight battery from the charger, then disconnect the charger from the wall socket.

Note:
If the battery is deep-discharged (below 2.7 V per cell), it will no longer be possible to recharge the battery using the charger.

Caution:
This charger can be used to charge either a 2S or a 3S battery. Please never connect both types of battery to the charger simultaneously.

Safety Notes regarding LiPo batteries:

- Do not place the battery in water or any other liquid.
- Never heat or incinerate the pack, or place it in a microwave oven.
- Avoid short-circuits, and never charge the battery with reversed polarity
- Do not subject the battery to pressure or shock loads, and never distort or throw the pack
- Never solder directly to the battery.
- Do not modify or open the battery.
- Batteries must only be charged with a suitable charger; never connect the battery directly to a mains power supply.
- Never charge or discharge a battery in bright sunlight, or close to a heater or open fire.
- Do not use the battery in areas subject to high levels of static electricity.
- Never leave the battery on charge unsupervised.
- Do not charge the battery in an inflammable location, or on an inflammable surface.
- Any of these errors can result in damage to the battery, explosion or fire.
- Keep the battery away from children.
- If electrolyte should escape, do not expose it to fire, as the material is highly inflammable and may ignite.
- Do not allow fluid electrolyte to come into contact with eyes. If this should happen, flush with copious amounts of water and contact a doctor without delay.
- The fluid electrolyte can also be removed from clothing and other objects by rinsing with copious amounts of water.

LIABILITY EXCLUSION
Since robbe Modellsport is not in a position to monitor the handling of these batteries, we expressly deny all liability and guarantee claims where the batteries have been incorrectly charged, discharged or handled.

Flight preparation

Open the transmitter battery compartment and insert the four AA dry cells (maintain correct polarity).

2. Switch the transmitter on (Fig. 1).
   The transmitter's battery status is shown on the screen. Move the throttle stick and trim to the bottom position (towards you). If you overlook this, the motors will not run.
   The transmitter LED flashes when the unit is switched on.
3. Slide the fully charged LiPo flight battery into the helicopter's support frame (Fig. 2) and connect it.
   When the flight battery is connected, the transmitter LED lights up constantly.

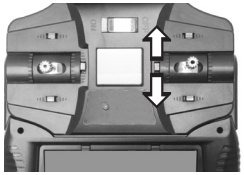
1

2

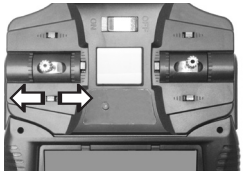
***Notes on the use of dry cells:**
Do not attempt to recharge dry cells, do not open them, and do not incinerate them. Remove exhausted dry cells from the transmitter after use. Escaped electrolyte may ruin the transmitter.

Trim settings, Mode 1

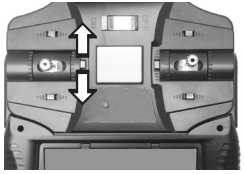
Throttle trim:
If the rotors start to spin without the throttle stick being touched, or do not respond to stick movements, you must adjust the throttle trim until they stop moving.



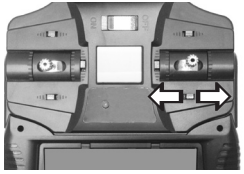
Tail rotor trim:
If the model's nose turns to right or left when it lifts off, adjust the tail rotor trim buttons to correct the rotation until the model maintains a stable heading.



Pitch-axis trim:
If the model flies forward or back when it lifts off, adjust the pitch-axis trim until it hovers over one point.

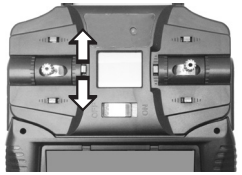


Roll trim:
If the model moves bodily to left or right when it lifts off, adjust the roll trim until it remains in a stable hover.

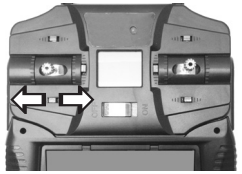


Trim settings, Mode 2

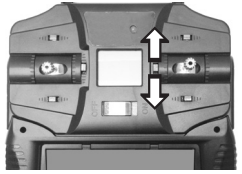
Throttle trim:
If the rotors start to spin without the throttle stick being touched, or do not respond to stick movements, you must adjust the throttle trim until they stop moving.



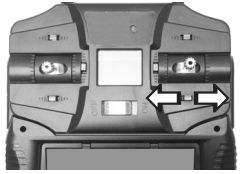
Tail rotor trim:
If the model's nose turns to right or left when it lifts off, adjust the tail rotor trim buttons to correct the rotation until the model maintains a stable heading.



Pitch-axis trim:
If the model flies forward or back when it lifts off, adjust the pitch-axis trim until it hovers over one point.

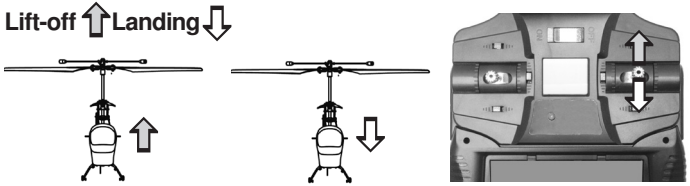


Roll trim:
If the model moves bodily to left or right when it lifts off, adjust the roll trim until the model remains in a stable hover.

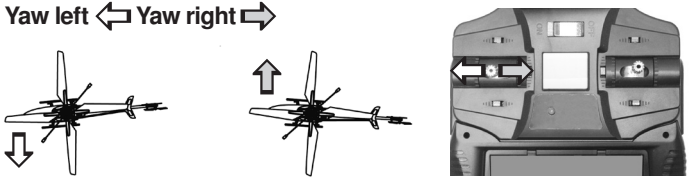


Controlling the model in Mode 1

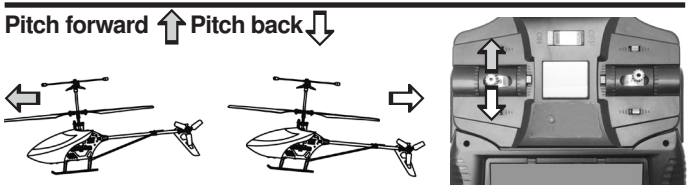
Lift-off ⇧ Landing ⇩



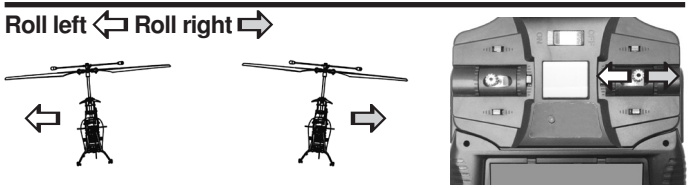
Yaw left ⇦ Yaw right ⇨



Pitch forward ⇧ Pitch back ⇩

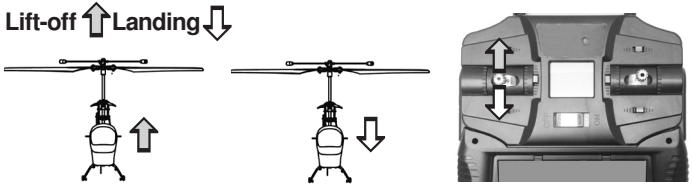


Roll left ⇦ Roll right ⇨

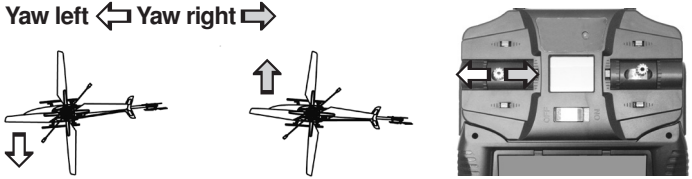


Controlling the model in Mode 2

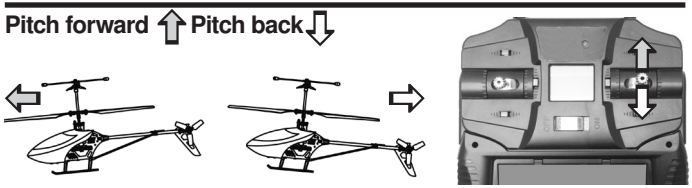
Lift-off ⇧ Landing ⇩



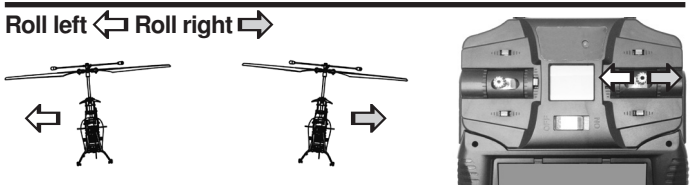
Yaw left ⇦ Yaw right ⇨



Pitch forward ⇧ Pitch back ⇩



Roll left ⇦ Roll right ⇨



Important Notes

Take-off: raise the rotor speed slowly and steadily until the model hovers at eye-level. At the same time adjust the trims until the helicopter flies stably and hovers over one point. At low height (approx. 10 - 15 cm above the ground) the model cannot be trimmed accurately due to the turbulence generated by the rotor.

Landing: slowly and steadily reduce the throttle setting until the model descends and touches down. Never reduce the throttle setting abruptly.

After the landing disconnect the flight battery from the receiver, and only then switch the transmitter off.

Caution: stopping (obstructing) the rotor blades when they are turning can cause serious damage to the mechanical system, and may even result in a fire. Immediately move the throttle stick to Idle if this should happen.

When flying the model never switch abruptly from forward flight to flight in reverse (pitch-axis function), as this could cause the upper and lower rotor blades to collide, which would destroy them.

Note regarding the flight battery: as soon as you notice a reduction in motor power, land immediately and disconnect the battery. Never continue flying until the battery is flat, as this causes a deep-discharge condition which results in permanent damage. Allow the battery to cool down before recharging it.

Replacing the rotor blades: if a rotor blade is damaged, replace it immediately. When fitting the new rotor blade, tighten the retaining screw just to the point where the blade still swivels smoothly.

Preparations for the first flight

Ideally the first flight should take place in a large indoor space devoid of obstructions. If you have to fly the model in the open air, wait for a day with **totally flat calm conditions**.

Charge the flight battery before flying.

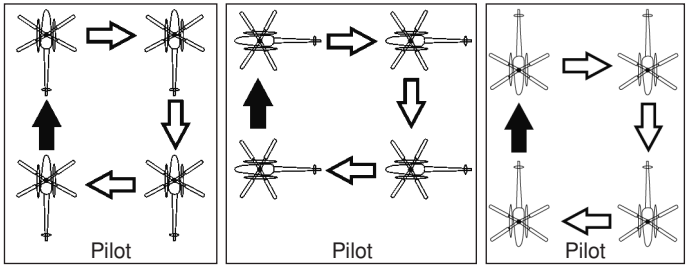
The first few flights

Once the model is properly trimmed, you can practise hovering, and carry out manoeuvres such as circles, squares, rectangles and figures-of-eight.

Initially it is always best to stand about two metres away from the model, behind or at right-angles to it; this avoids giving incorrect control commands.

You can fly a square pattern by alternating the direction of flight: away from the pilot, to the pilot's right, and then towards the pilot again.

Tip: when the helicopter is flying with the nose pointing towards you, the controls are reversed (apart from the throttle control).

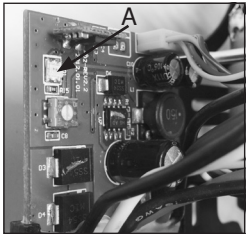


Synchronising the drive motors

This set-up procedure is only necessary if the two drive motors are not synchronised, or after a repair.

Procedure:

1. Remove the canopy.
2. Insert four AA-size dry cells* in the transmitter (maintain correct polarity), and switch it on.
3. Connect the flight battery to the model. Unfold the rotor blades, then cautiously open the throttle.
4. If you rotate the potentiometer (A) clockwise (to the right), the upper rotor turns faster; this causes the model to yaw to the left.
5. If you rotate the potentiometer (A) anti-clockwise (to the left), the lower rotor turns faster; this causes the model to yaw to the right.



***Please read the information regarding dry cells on page 9.**

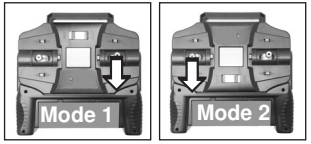
Re-binding the transmitter

This procedure is only necessary after replacing individual components.

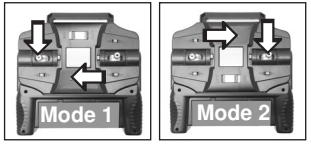
Insert four AA-size dry cells" in the transmitter (maintain correct polarity).

1. Connect the flight battery: the red monitor LED lights up (1).

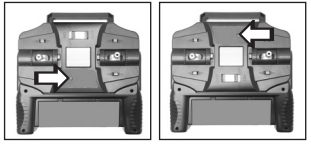
2. Move the transmitter's throttle stick to the bottom position (towards you).



3. Press the pitch-axis stick vertically down while you switch the transmitter on, then release the pitch-axis stick. The red LED on the transmitter flashes.



4. The binding process is complete when the red LED on the receiver (1) and the green LED on the transmitter glow constantly.

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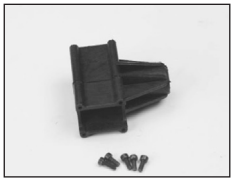
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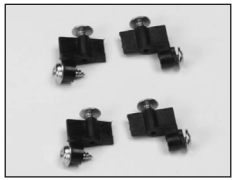
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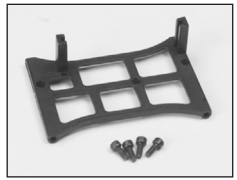
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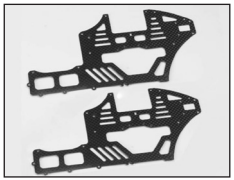
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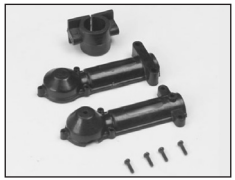
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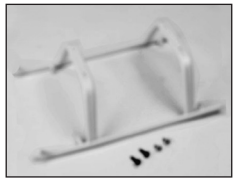
S2542010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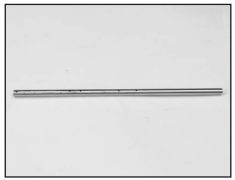
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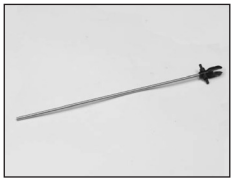
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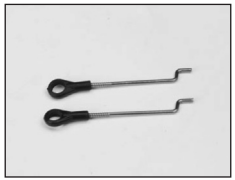
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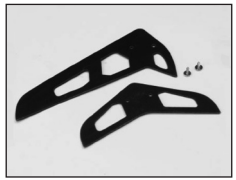
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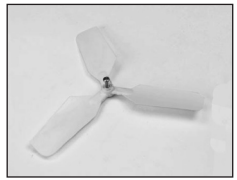
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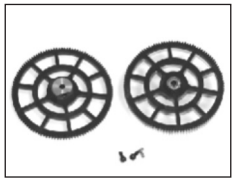
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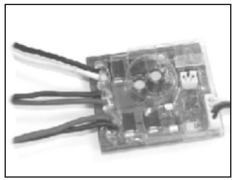
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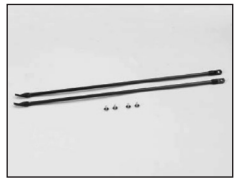
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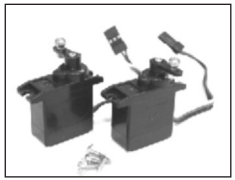
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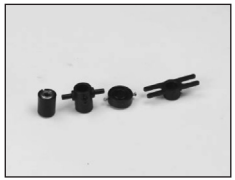
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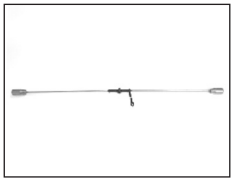
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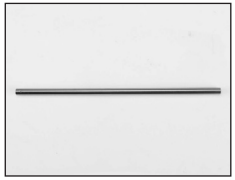
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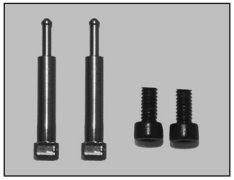
S2542030


S2542031

Replacement parts list - Blue Arrow XL 490 RTF

Order No.	Description
S2542001	Dome bearing bracket
S2542002	Tail boom bracket
S2542003	Servo mount
S2542004	Main rotor blades
S2542005	Base plate
S2542006	Circuit board mount
S2542007	Battery compartment
S2542008	Side frame
S2542009	Tail rotor gearbox housing
S2542010	Canopy
S2542011	Landing gear
S2542012	Swashplate guide
S2542013	Outer main rotor shaft
S2542014	Inner main rotor shaft
S2542015	Rotor blade grip
S2542016	Pushrod
S2542017	Tail stabiliser set
S2542018	Tail rotor blade
S2542019	Motor set
S2542020	LiP battery, 11.1 V / 1600 mAh
S2542021	Main gear set
S2542022	Control unit
S2542023	Swashplate
S2542024	Tail braces
S2542025	Servo, 9 g
S2542026	Battery charger
S2542027	Small parts set for rotor shaft

Replacement parts list - Blue Arrow XL 490 RTF

Order No.	Description
S2542028	Flybar
S2542029	Tail boom
S2542030	Canopy support
S2542031	Spacer set

When replacing components it is very important to use the correct type of cross-point screwdriver or allen key, and to tighten the screws with great care.

Use thread-lock fluid on metal-to-metal joints only!

Causes of problems in flight, and how to eliminate them*

Cause of problem	Reason	Remedy
Rotor blades do not turn	Transmitter not switched on -	Switch transmitter on
	Flight battery not connected correctly	Connect flight battery correctly
	Voltage of dry cells in transmitter or flight battery not sufficient	Fit new dry cells, recharge flight battery
	Transmitter not bound to model	Re-bind transmitter and model
	Throttle trim set too high	Move throttle trim back to lowest position
Motors do not run	Motors faulty	Replace motors
	Cable not connected correctly to the circuit board	check that connector is correctly engaged
Model responds incorrectly to control commands	Battery voltage too low	Replace dry cells, recharge flight battery
Model fails to lift off	Rotor blades faulty	Replace rotor blades
	Battery voltage too low	Replace dry cells, recharge flight battery
Rotor blades continue to spin	Throttle trim set incorrectly	Move throttle trim back (towards you) and move throttle stick fully back
Model yaws, pitches and rolls, but is incapable of hovering	Model is in a draught	Locate cause of draught - Select different take-off location
	Model's Centre of Gravity incorrect	Correct CG by re-positioning flight battery
Model vibrates in flight	Rotor blades damaged, or unable to self-align	Check correct location of flybar and rotor blades
	Rotor blades not matched for weight	Replace rotor blades
Tail not stable	Rotor blades faulty	Replace rotor blades
	Drive motors not synchronised	Synchronise drive motors

* If you are unable to eliminate the problems, cease flying and ask your dealer for assistance or use our Technical Hotline: +49 (0)66 44 / 87-777 hotline@robbe.com

CE

robbe Modellsport GmbH & Co. KG hereby declares that this device conforms to the fundamental requirements and other relevant regulations of the corresponding EC Directive. You can read the original Conformity Declaration on the Internet at www.robbe.com: click on the "Conformity Declaration" logo button which you will find next to the corresponding device description. This product can be operated in all EU countries.

This symbol means that you should dispose of electrical and electronic equipment separately from the household waste when it reaches the end of its useful life. Take your unwanted equipment to your local council collection point or recycling centre. This requirement applies to member countries of the European Union as well as other non-European countries with a separate waste collection system.

Disposal of batteries

Batteries must not be discarded as domestic refuse. To protect the environment, always return exhausted or defective cells to your local recycling centre. These include retail sales outlets for batteries, and communal toxic waste disposal centres. Cover any bare wires with insulating tape in order to avoid short-circuits.

robbe Modellsport GmbH & Co.KG

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